

What is the optimal mowing height and frequency for lawn-height turfgrass?

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For many people, owning a house with a lawn is part of the American dream. The unspoken part of that dream is that the lawn has to be mowed. Ideally, we would like to mow our lawns as little as possible while still maintaining acceptable quality and color throughout the growing season. Many people adhere to a weekly mowing schedule for convenience, while traditional recommendations advocate the 1/3 rule, or removal of no more than 33% of the leaf tissue at each mowing event. Despite the widespread nature of this recommendation, there is limited scientific evidence to provide support. This study was designed to determine how different tall fescue mowing heights and frequencies affect the total number of mowing events, cumulative clipping yield, and turfgrass quality.

MATERIALS AND METHODS

This study was conducted on a one year old stand of “Spyder” tall fescue at the JSA Turfgrass Center in Mead, NE. It was a split block design with three replicates. Treatments included two mowing heights (2” or 3”) and four mowing frequencies (weekly, 25% - 1/4 rule, 33% - 1/3 rule, or 50% - 1/2 rule; further explained in Table 1). The experiment was initiated on 20 May 2014 and ended on 7 October 2014 when all plots were mowed to their respective mowing heights.

Clippings were collected and weighed each time plots were mowed to measure cumulative growth rate. Mowing was initiated once two of the three replicate blocks surpassed the thresholds described in Table 1. To measure stand height, a piece of cardstock with a slit cut in the center was placed on top of the turf and its height above the soil was measured with a ruler inserted through the slit. Turf quality (1 to 9 scale; 6 is minimally acceptable) was rated every 14 days to determine how treatments affected the visual appearance of the turfgrass.

2014 RESULTS

The 25% mowing threshold resulted in the greatest number of mowings followed by the weekly mowing, 33% threshold, and 50% threshold (Fig. 1). The weekly mowing resulted in more frequent mowing in May and June when turf growing slower than it was during summer (Table 2). Growth rate was greatest during the middle of summer which was an unexpected with respect to typical cool-season growth curves found in many texts (Fig 2). During the middle of summer, the 25% mowing threshold treatments were mowed more

than once a week and resulted in more total mowing events compared to mowing weekly (Table 2). The 50% mowing threshold resulted in the greatest cumulative clipping production compared to the other mowing frequencies which were similar to each other (Fig. 3). Mowing height did not affect cumulative clipping production or in-season growth rate. On average, the weekly mowing interval, 25% and 33% threshold resulted in acceptable lawn quality with the 25% and weekly intervals only slightly better on some occasions. The 50% mowing threshold resulted in inconsistent lawn visual quality ratings. This occurred because i) the plots displayed symptoms of scalping after mowing (yellow color, thin density, ect.) and ii) the grass became matted and had an un-kept appearance in the days prior to mowing. Interestingly, the scalping did not hinder growth rate.

2014 CONCLUSIONS

Mowing to the 1/3rd Rule (33% mowing threshold) resulted in acceptable lawn quality with no scalping and fewest mowings compared to other treatments that did not cause scalping. Mowing on a weekly schedule may be convenient but can lead to unnecessary mowing events, especially in late spring when the turf was not growing vigorously. While mowing to the 50% threshold caused some scalping, it may be a good option for lower maintenance lawns. It is still uncertain how turfgrass quality and weed invasion would be impacted by this mowing frequency over the long term. The 50% threshold did increase growth rate which is known to increase nutrient uptake and reduce soil fertility. This clipping data also suggests that irrigated tall fescue lawns do not follow bimodal turfgrass growth characteristics frequently described in many turfgrass texts. More work is required to evaluate if these models accurately reflect growth rate of other cool-season turfgrass species.

Table 1. Canopy height thresholds for tall fescue plots mowed at two or three inches. All four replicates we mowed once two of the four replicates surpassed the appropriate thresholds for each particular treatment.

Frequency	2" Mowing Height	3" Mowing Height
	<i>Mow when turf height is equal to:</i>	
25% removal (1/4 rule)	2.66"	4"
33% removal (1/3 rule)	3"	4.5"
50% removal (1/2 rule)	4"	6"
Weekly mowing	-	-

Table 2. Mowing dates for each treatment.

Height of Cut	Mowing Frequency	2014 Mowing Dates
2"	Weekly mowing	27 May, 3, 10, 17, 24 June, 1, 8, 15, 22, 29 July, 5, 12, 19, 26 Aug., 2, 16, 28 Sept., 7 Oct.
	25% removal	27, 30 May, 5, 10, 20 June, 1, 8, 15, 18, 22, 24, 29 July, 1, 4, 8, 12, 18, 22 Aug, 2, 16, 25 Sept., 7 Oct.
	33% removal	29 May, 11 June, 1, 8, 15, 24 July, 1, 5, 8, 12, 18 Aug., 2, 16, Sept., 7 Oct.
	50% removal	17 June, 8, 24 July, 8, 26 Aug., 7 Oct.
3"	Weekly mowing	27 May, 3, 10, 17, 24 June, 1, 8, 15, 22, 29 July, 5, 12, 19, 26 Aug., 2, 16, 25 Sept., 7 Oct.
	25% removal	6, 11, 24 June, 2, 8, 15, 22, 24, 29 July, 1, 4, 8, 12, 18, 22 Aug., 2, 16, 25 Sept., 7 Oct.
	33% removal	1, 8, 17, 24, 29 July, 8, 12, 22 Aug., 2, 16 Sept., 7 Oct.
	50% removal	8 July, 24 July, 14 Aug., 2 Sept., 7 Oct.

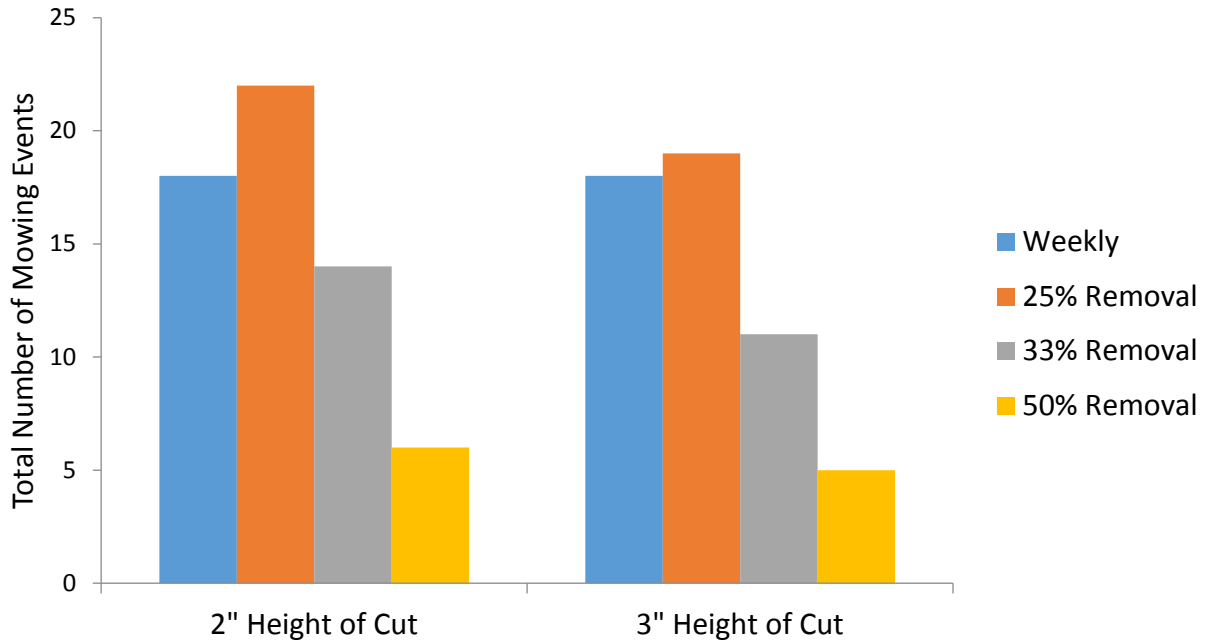


Figure 1. The total number of mowing events for the different mowing height and mowing frequency treatments.

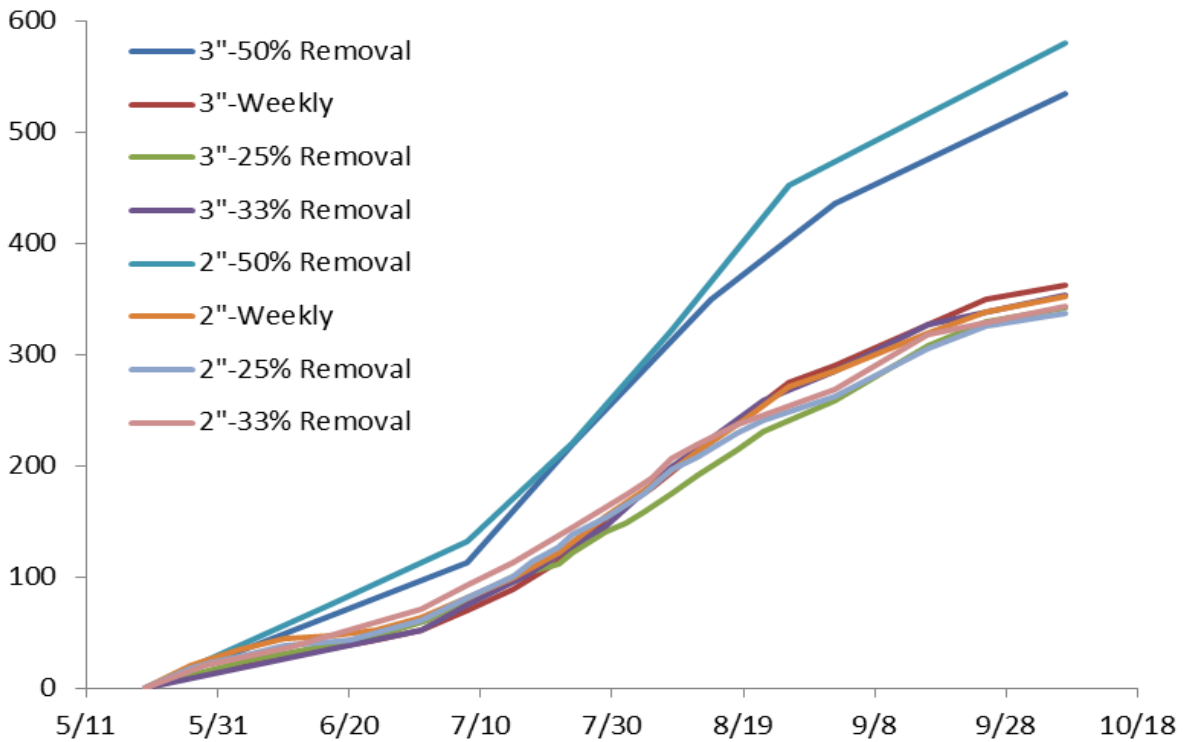


Figure 2. Mean cumulative clipping yield of the eight different mowing treatments over the course of 2014. A steeper curve indicates enhanced growth rate which occurred in late July 2014.

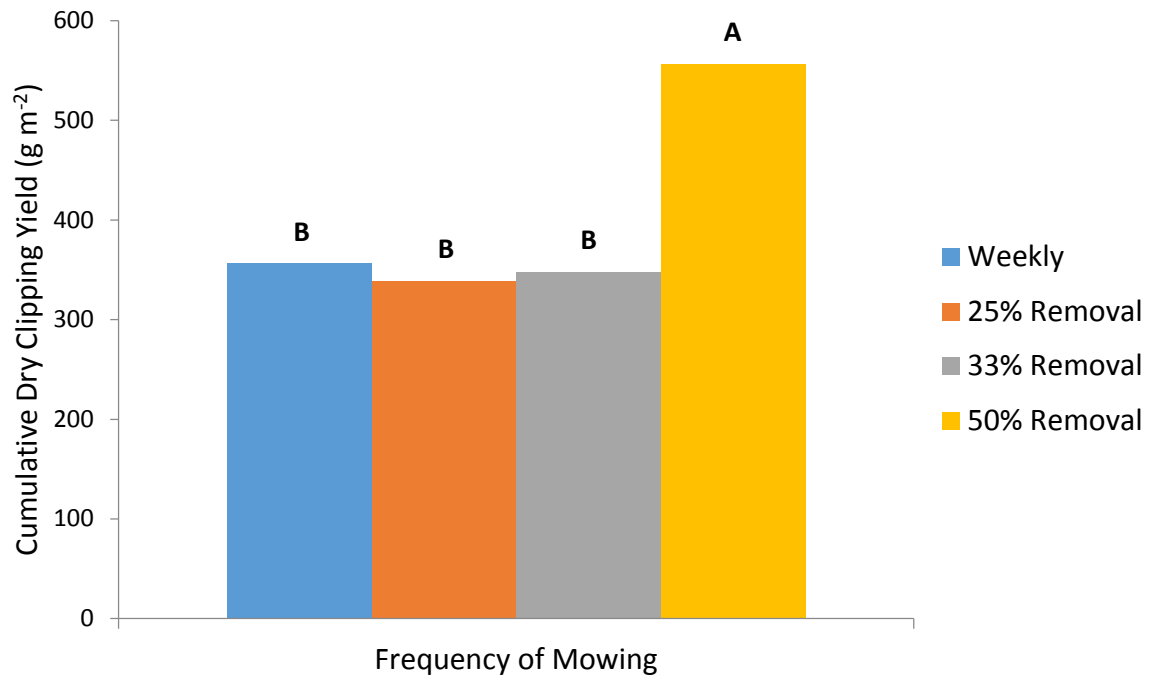


Figure 2. The annual cumulative clipping yield as affected by mowing frequency. Mowing height and the mowing height x frequency interaction were not significant.

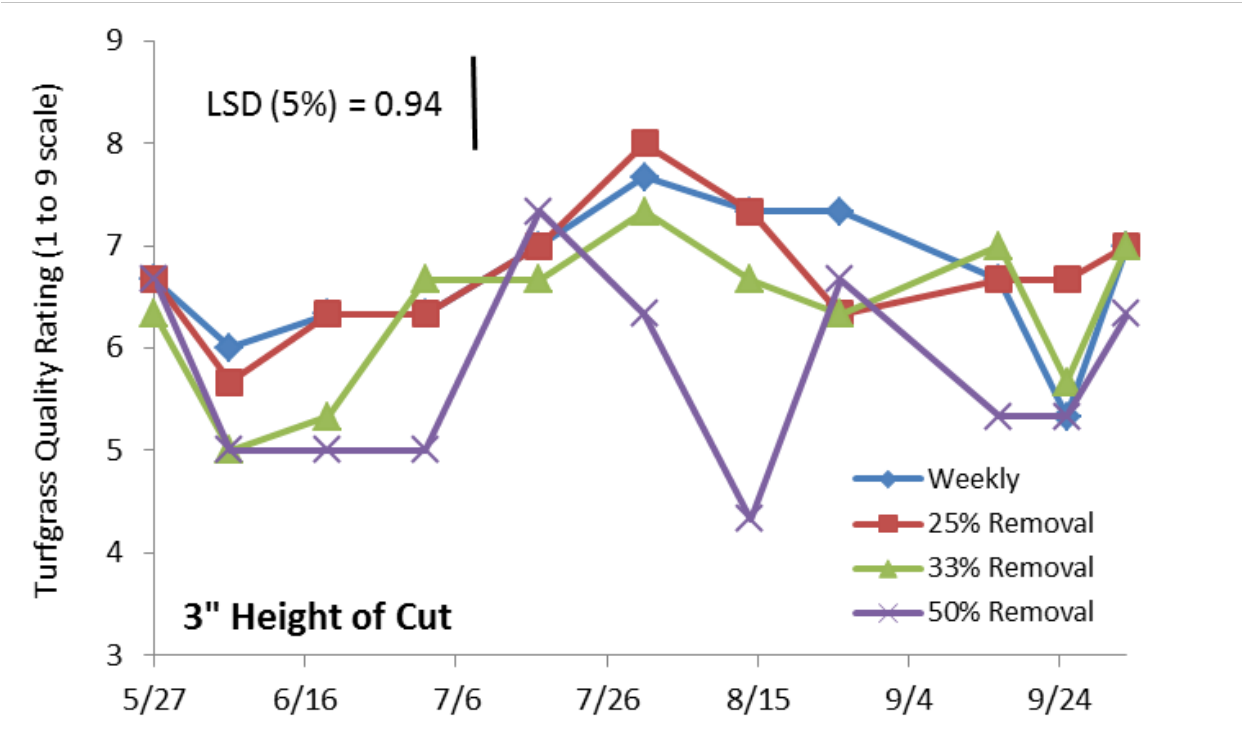
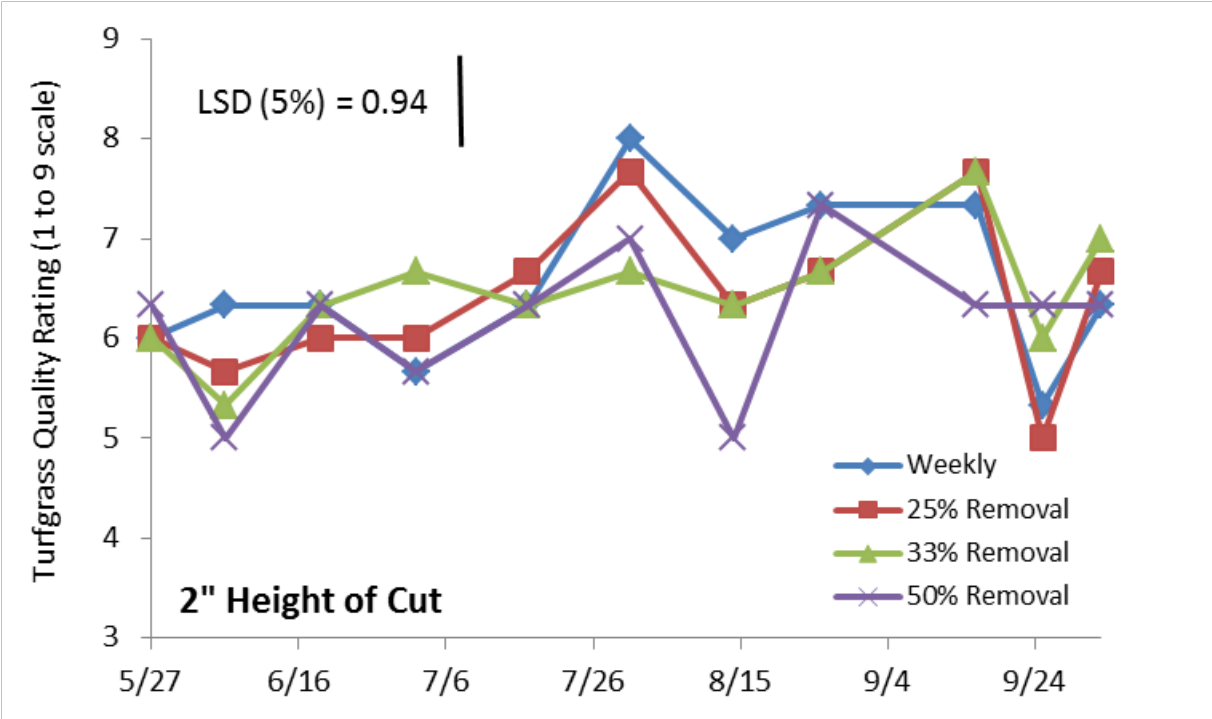


Figure 4. The effect of mowing height and frequency on visual turfgrass quality rating.